

STUDY OF AN ORAL FIXATION: PICA

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This research focuses on the psychodynamics of pica in children, viewing the symptom as an oral fixation or regression. The possibility is presented that psychoanalytic theory may be validated and perhaps extended by studying children and analyzing the data statistically. Although the investigative method used is not psychoanalysis, the psychoanalytic theory of personality is the frame of reference.

Pica is a depraved appetite with resultant ingestion of nonfood substances. Pica has been known since ancient times and found to occur on every continent (Anell and Lagercrantz, 1958; Cooper, 1957; Laufer, 1930). In the United States at present, pica occurs most frequently among the low-income Negro and white populations, and some Indian tribes; it is not so prevalent in the upper- and middle-income white population (Cooper, 1957; Gardner and Tevetoglu,

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1957; Layman, n.d.; Millican et al., 1962). There is a cultural acceptance of clay, dirt, and starch eating among many lower-income Negro women, who believe that "all children eat dirt" (Layman et al., 1963; Lourie et al., 1963).

The early cultural roots of pica are found in the magical meanings and rituals of dirt eating in Africa. Pica was present to such an extent among the Negro slaves that mouthlocks were sometimes used to prevent the slaves from committing suicide by ingesting excessive quantities of dirt. Medically pica is important because, as has long been recognized, it produces almost all of the cases of lead poisoning in young children (Byers, 1959); also children who are hospitalized for accidental poisoning are found to have a high (55.7 percent) incidence of pica (Millican et al., 1962).

Nutritional factors, especially anemia, have been incriminated as causing pica (Cooper, 1957; Lanskowsky, 1959), but recent controlled studies have not demonstrated any nutritional deficiency to be etiologically related to pica (Gutelius et al., 1962, 1963). Kanner (1957), Van der Sar and Waszink (1952), Mellins and Jenkins (1955, 1957), Wortis et al. (1962), and the authors of this study (Millican et al., 1956; Lourie et al., 1958; Layman et al., 1963) have reported on various psychiatric aspects of pica.

Experiences that lead to fixations have been outlined by Fenichel (1945): (1) excessive satisfactions at a given level of development; (2) excessive frustrations; (3) both excessive satisfactions and excessive frustrations; (4) or most frequently "experiences of instinctual satisfaction which simultaneously gave reassurance in the face of some anxiety or aided in repressing some other feared impulse. Such simultaneous satisfaction of drive and of security is the most common cause of fixations."

In selecting children with pica who were suitable for this study of oral fixation or regression, we gave consideration to constitutional differences in oral drives, the ages of the children, and the severity of the symptom. Children normally begin putting things in their mouths at the age of about five months. According to Gesell and Amatruda (1941), hand-to-mouth activity becomes less frequent at about one year of age. A recent survey of children, ages one to six

years, at Children's Hospital showed that the percent of children ingesting nonedible substances dropped sharply at three years of age, but the percentage was higher in children from the Negro low-income population than from white middle- and upper-income families (Millican et al., 1962).

Anna Freud (1946) has warned about the necessity of being careful in conclusions as to the libidinal normality of a child. She points out that there are individual differences based on constitutional factors which may tend to create points of special libidinal interest in the child. She emphasizes that normally an extensive overlapping exists between the various libidinal organizations, and the oral phase may persist for months after the anal-sadistic organization has come into being. Normally, none of the component instincts would be expected to be completely absent from the clinical picture, nor would a continuance of oral forms of gratification into the fourth or fifth years mean that the child had failed to reach the phallic level. "To insure normality it is sufficient if the bulk of the libido reaches the organization which is appropriate to the age of the child" (A. Freud, 1946).

Exploration of the environment by mouthing is a part of early normal development, and an occasional ingestion may occur on that basis. Furthermore, children, at times as part of their play, eat things that are not food. Anna Freud's comments (1946) here are pertinent: "the neurotic element in any play activity is unmistakable when it becomes repetitive and monotonous and when it interferes with all other kinds of activities."

RESEARCH POPULATION

Our selection of children for study as cases of pica had to be arbitrary, since a craving for nonedible substances is not measurable objectively and since a diagnosis of an oral fixation cannot be arrived at prior to study. For this research we defined a child to have pica if he was eighteen months of age or older and had persistently ingested nonfood substances for at least three months prior to the time of the study. For the majority of the children, pica began about the time the child began to crawl or walk and was a continuation of earlier oral exploration of the environment. The substances ingested in-

cluded plaster, putty, paint, paper, dirt, crayons, wood, cigarette ashes and butts, matches, string, yarn, cloth and laundry starch. Some children, especially the brain-damaged, showed no discrimination and ingested anything available. Many children were more selective and preferred certain substances, going to considerable trouble to obtain them. All the children studied showed a remarkable persistence in their pica. If the holes in the plaster were patched, many youngsters would dig a new spot to eat from. One child searched for laundry starch in the playroom when candy was available. Another child preferred eating newspapers to popsicles. She would leave any activity to stuff as much newspaper as possible into her mouth when it was available. She would cry for paper to chew on even when given something to eat. Another child similarly craved dirt.

The cases selected for comparison with the pica group were children who had no history of ingestion of nonedible substances after the age of eighteen months, did not persistently mouth or chew inedible substances, had no siblings who ingested, and were in the age range and of the sex needed for group matching. The term *comparison group* is being used, rather than control group, because, although it was our aim, it did not prove possible to match precisely the groups for age, sex, and race. There were two comparison groups: (1) normal comparison group: children who had not been referred for psychiatric problems and who upon study did not manifest gross psychopathology; and (2) psychiatric comparison group: children who had been referred to the Department of Psychiatry, or who had been studied as normal, but had not been found sufficiently free of gross psychopathology to be retained in that group.

The research population on which the study was based comprised 154 children (125 Negro, 29 white) in the following categories:

Pica Group (Pica-Lead Poisoning) N = 95; Male 45, Female 50

Pica only	
Negro Clinic	47
White Clinic	5
White Private	7
	59

Lead Poisoning (resulting from pica)

Negro Clinic	31
White Clinic	5
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	36

Normal Comparison Group N = 27; Male 15, Female 12

Negro Clinic	27
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Psychiatric Comparison Group N = 32; Male 19, Female 13

Negro Clinic	20
White Clinic	6
White Private	6
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	32

PLAN OF STUDY AND LIMITATIONS

The research team members were either psychoanalytically trained or oriented, and consisted of social worker, psychologist, and psychiatrist. The basic study consisted of a history from the parents, psychological testing of the child, and a psychiatric playroom interview with the child. Rorschach evaluation was made of the 115 mothers (93 Negro and 22 white) who were willing to participate. Many of the children were followed in the Pica-Lead Poisoning Clinic for several years after the initial evaluation. Seventeen of the pica cases and seven of the psychiatric comparison cases were seen in psychotherapy.

A major limitation of the study stemmed from the time-consuming process of completing the study of enough cases to analyze the data statistically as well as psychodynamically. Obviously, the larger the number of cases studied, the more definitively the significant factors could be isolated by statistical methods. Psychoanalysis was not employed either as an investigative or therapeutic method because of research limitations in supporting funds and availability of professional time; and because of the probability, based on our experience in offering less intensive therapy, that many of the parents would not have been able to cooperate had the opportunity been offered the children.

Other limiting factors were: (1) some anamneses were of questionable validity because of the vagueness with which some mothers recalled details; (2) the rating scales used to assess personality were subject to the rater's personal and cultural bias; and the only checks on the reliability of the ratings were by comparing clinical evaluations of the psychologist and the psychiatrist; (3) the three main comparison groups were not perfectly matched, hence were not true controls: by comparing subgroups from each major group, the effect of some of the variables other than pica which led to differences between the groups was controlled; (4) the study did not employ a double-blind procedure; it was inevitable that the person taking the history knew whether the child was a pica or comparison case.

The details of the findings and their statistical analysis are not being reported here. This discussion is based principally on the factors which did show statistically significant differences between the groups. Points which were of psychodynamic importance in individual cases are also included.

CASE STUDIES

Case 1

Ann's history is representative of many of the children with pica: a culturally based acceptance of pica, maternal pica, other parental oral habits, separation at an early age from parent or surrogate, lack of maternal warmth for the child, and economic deprivation.

Ann was first referred for study at the age of nineteen months when she was hospitalized for ingestion of lighter fluid, but the mother did not cooperate in the completion of the study until Ann was three years old. She was the third child of a twenty-seven-year-old Negro woman whose pregnancy occurred prior to her marriage to the father. The mother did not want to breast feed the child. The bottle was used as a pacifier; the mother said, "I shove the bottle at her every time she whimpers." Due to the father's inability to hold a job, the parents lived first with the maternal grandmother, who cared for Ann until she was about six months old, and then with the paternal grandmother. At the time of Ann's hospitalization, the two older half siblings rejoined the family. When Ann was between two and four and a half years of age, four more siblings (the first twins) were born to her mother.

Ann had severe pica, ingesting paint, plaster, dirt, wood, and parts of toys. The parents attempted to prevent her eating plaster, but she would dig open the holes which they replastered. The family diet was extremely poor with many meals missed because of the father's irregular employment. Ann had a nutritional anemia when she was hospitalized at nineteen months.

In the playroom interview the child related passively to the examiner. There was no protest about separation from her mother, though she showed concern by becoming immobilized and by releasing tension as she twisted her hair and quietly answered "Yes." She did not put anything in her mouth. She tested within the low-average range of intelligence.

The mother began eating dirt with girlfriends when she was first pregnant at sixteen years. She regularly traveled to Maryland to get a particular dirt which she craved. She also ate starch during her pregnancies. She liked the smell of wet clay after a rain and said, "It would kill the taste of the food" which she had eaten, though she also loved food. In spite of her taste for dirt, the apartment was kept meticulously clean. Ann's mother seduced her to eat starch and dirt with her, which annoyed the father when he realized the relationship of her pica to her other difficulties.

Both of Ann's parents were immature and dependent upon their own mothers for emotional and economic support. The father had periodically turned to drugs and alcohol. Psychological tests revealed that the mother had strong aggressive drives and marked sexual problems with a depreciation of the role of men.

The mother considered Ann to be a bad child, and Ann used the shared pleasure of indulgence in pica with her mother as a means of attempting restitution. The youngster did have some trust of other people, although she was very passively compliant, and had anxiety about separation. She could only express her feelings in an indirect way, rather than making an open protest or appeal.

Ann finally stopped eating nonedible substances at the age of four and a half. She had taught the twin siblings pica, but after giving up the habit herself, she also attempted to stop them. The mother continued to have marked ambivalence about her children's pica. For several years supportive casework and frequent assistance with environmental and financial problems was of some help in stabilizing

the family, although at the last visit, the parents were separated. Ann, however, had no recurrence of pica.

Case 2

This case is illustrative of a minority of the children studied in that pica was a symptom of neurotic disturbance. The child's early dependency needs were inadequately met because of marital discord, repeated separations from the father beginning at an early age, frequent changes of day caretaker due to the mother's employment, and excessive maternal demands for early controls of behavior.

Linda was a pretty nine-year-old Negro girl who was brought to us by her mother when her persistent habit of eating paper in recent months culminated in her eating about half a thick encyclopedia.

The mother was an ambitious attractive woman who had worked since the child was six months old, holding a responsible secretarial job. The child's parents had a very stormy marriage, with separations, divorce and remarriage, and, again at the time of study, separation. It was three months after the last separation, following a period when there had been no pica for two years, that the child again began pica, which had been intermittently present since the age of two years. She had eaten tufts off her bedspread, her sweater, plaster, paper, and upholstery. Pica was related in time to the father's disappearance and appearance, and to changes in the child's daytime care. Linda had been spanked for her pica, and told to suck her thumb or eat food. She had been weaned and toilet trained very early. The mother pushed her toward scholastic achievement and extracurricular activities.

The mother never had any pica. She had digestive attacks for two years, and when she became ill at night, Linda cared for her. The father drank alcohol excessively.

Linda and her mother were seen in psychotherapy for twenty-five interviews each. It became clear that the mother's early emphasis on control of impulses had led to a pseudo independence on the part of the child, and her rejection of having to grow up, because then she could not be "helpless, helpless, helpless." There was a power struggle with the mother, with the mother being very adept at manipulation, and Linda identifying with her by being a "slicky girl." Linda had a number of sexual concerns.

Her aggressive use of pica was seen in her attempts to use the symptom as a means of forcing her mother to marry a man the mother was dating, and later to force continuation of her own psychotherapy. Pica was a neurotic expression of her desire to be more dependent, and not have to be overly controlled, as well as a reaction to separations, and an expression of her anger toward her mother about these deprivations. Pica disappeared when her dependency and aggressive feelings were brought to consciousness.

Case 3

Barbara was the oldest child studied, and as was typical of older children with pica, this oral fixation was symptomatic of more serious psychopathology than was generally true among children under three years of age. There had been severe deficiency of parental care in the first year, and by three years permanent separation from the father. There was identification with adult orality in the form of pica in both the mother and maternal aunt, and alcoholism in both parents.

Barbara, a fourteen-year-old Negro girl, was referred because of a history of ingesting a page of newspaper every day. She was hospitalized at the time with somatic complaints.

She had been bottle fed because she was born prematurely. Weaning was accomplished at two years. At three months she refused baby foods, and although the mother withheld the bottle to force her eating of solids, the child still rejected them. When Barbara was four months old, a brother, aged two years, died of a Wilms tumor. Barbara later heard a distorted version of the illness from the mother and fantasized herself as grieving at the funeral. When she was three years old, her parents were divorced and her mother began working as a clerk. The mother was vague about the cessation of mouthing, but thought that hair pulling and possibly hair eating began at about three years, as did nail biting. While living with her maternal grandfather and aunt, at eight years of age, Barbara began imitating the aunt's eating paper and plaster, and she continued pica intermittently. At the time of the study, as well as previously, the mother craved and ate plaster.

Barbara had been hospitalized shortly prior to the time of the evaluation, when a tumor of the neck (which she associated with the

tumor of her brother) was removed. She felt supported by the sympathetic young doctor and returned to the hospital with numerous somatic complaints, particularly pains in her abdomen. She was depressed, as was evidenced by her slowness and softness of speech, her aimless playing with food, and her very flat affect. She gave evidence of being unable to express her angry feelings and she denied sexual concerns. She reported her pain as being worse at two points in the interview when she was talking about separation, once referring to her father. She had more pain again when she was about to be discharged from the hospital.

Neither of Barbara's parents was able to meet her dependency needs. Both parents drank excessively when Barbara was an infant, and the mother continued to be alcoholic. Barbara would have liked to feel that her father was interested in her, but actually she was rebuffed when she sought him out. The mother dressed in a more adolescent fashion than the daughter. There was competition between them for clothing, with the mother wearing the child's. Barbara worried about her mother's work problems, and the mother said, "Barbara is just like a mother to me." The mother controlled the child by making her feel guilty. Barbara had a great preoccupation with ancient history, particularly the story of Helen of Troy. In contrast with Helen, the center of much interest, Barbara had reason to feel that no one was much concerned with her. The newspaper she ingested was, in a sense, a steady source of supply in that it came morning and afternoon and she ate some of it when it was delivered. Both the mother and Barbara had depressive schizoid personalities. There were latent homosexual trends in the girl.

Barbara was seen for psychotherapy in thirteen interviews over a ten-month period. Treatment had to be terminated because it was not possible to work with the mother or even to get her to keep necessary appointments with hospital services to arrange for financing the child's treatment. At first, Barbara was depressed. She expressed fear of her mother's anger, because if she expressed anger toward her mother, mother would attack her, swinging her fists. Barbara had considerable concern about sexual matters and wanted advice from her therapist. She was able to express grief about her father's lack of concern about her. Pica disappeared midway in therapy, but reappeared. The preoccupation with Helen of Troy was given up, and

there was some improvement in her schoolwork and her relationship with peers.¹

Case 4

James was one of the children whose organic brain damage, although not the determining factor in the onset of pica, certainly contributed to the development of the symptom. While many children with organic brain damage do not develop pica, the difficulty which this family found in handling the damaged child and in meeting his increased emotional needs, resulted in regression, including pica, and finally in psychosis.

James was a white child, aged two years and eleven months, when he was first studied by one member of our research team. At that time he had an IQ of 69 on the Merrill-Palmer test and there was evidence of some organic brain damage as a factor contributing to his retardation. He did not answer questions, but repeated what was asked of him. The mother reported that he said certain words spontaneously. He was a head-banger, poor sleeper and eater, was not toilet trained, and did not know how to play. He was hyperactive, very distractible, had poor frustration tolerance, perseverated, and was stimulus bound. At the time he was studied by the research team, he was five years and two months of age; there was marked regression since the initial examination, and he showed psychotic behavior since a tonsillectomy about six months prior to the second study.

As an infant he had mouthed and chewed on a teething ring, toys, and his blanket. At about three years of age, he started eating grass, leaves, dirt, flowers, paper, crayons, ashes, soap, and toothpaste. He would run a half block to get a brightly colored flower to eat. There had been an early feeding problem because the mother developed fear that the child was not getting enough milk. The bottle was used as a pacifier; the child was weaned from the bottle at about two years and ten months at the doctor's suggestion. He refused to take milk from the cup, and has had no milk since. The mother still considered his appetite very poor. She described her relationship to James as being quite anxious, perhaps expecting too much of him too early, trying to force a solution of a particular problem with him, then losing her temper, becoming quite angry with him, and then giving up.

¹ Dr. Mary Evans Robinson was the therapist for Cases 2 and 3.

She felt guiltily responsible for any sort of difficulties he had, either emotional or nutritional.

From the mother's psychological testing, it was evident that she had strong dependent needs herself and a poor relationship to males. The relationships with the youngster which seemed open to her were on the basis either of an infantile physical contact or of harsh demanding hostility. In infancy, the child apparently had difficulty establishing relationships with his parents, as evidenced in his not being a cuddly baby and later saying, "Go away." When studied, instead of saying, "Go away," he wanted to be picked up and held, saying, "Pick me up." He even climbed all over strangers who came to the home. He seemed to be attempting a solution to his needs by a clinging dependency which was quite different from the earlier pattern. Although organic brain damage was probably present from birth, pica did not begin until age three and was followed by regression to psychotic behavior.

FAMILIES

The socioeconomic group from which most of the patients were drawn was a marginal income Negro population. Culturally there is a matriarchal family structure, with family instability. However, even within this subculture, major separations from parents were more frequent in the pica and psychiatric comparison groups than in the Negro normal comparison group. In a number of individual cases, the onset of pica was related to separations, or to the mother's beginning employment. In the normal group, there were more children whose fathers were present in the home, with no separation from the child. Also, among the fathers present, those of the normal children showed a warmer relationship to them, and were much more positively involved in the children's lives. In some cases, where all the other findings would have suggested that the child might have pica, the role of the father seemed to be the decisive factor in preventing it, either by the father's interest in the child, his meeting of the mother's dependency needs, or his definite disapproval of the symptom of pica.

Based upon the number of pica children who had any siblings old enough to develop pica, the percent having siblings with pica was:

Negro Lead Poisoning—63 percent, Negro Pica—54 percent, White Pica and Lead Poisoning—27 percent.

Also different from the white groups studied was the cultural acceptance of pica among the low-income Negro women, particularly pregnant women, and children. Mothers of children with pica had a high incidence of pica themselves (63 percent), and in this they were significantly different from both the normal and psychiatric comparison groups. The mothers who had pica themselves, and also the mothers of the psychiatric group showed more evidence ($p = .05$) of other form of oral fixation: obesity, alcoholism, and drug addiction.

Only one adult male with pica came to attention during the study. His wife had told him with amusement about being questioned in Pica Clinic as to whether she had eaten starch during pregnancy. He then said that he ate boxes of starch regularly whenever she was pregnant and concealed it from his friends by saying he was buying starch for his wife. The oldest child, a girl, identified with her mother's lack of pica, whereas the four small sons, like their father, all had pica. Pica is usually not an acceptable masculine activity, whereas drinking alcohol is. Alcoholism and drug addiction were found to be significantly higher among the fathers of both the pica and psychiatric comparison groups than in the normal group.

Since the effect of the mother's personality could be more clearly defined psychodynamically if contributing factors of organic brain damage and retardation in the child were excluded, the data on the mothers analyzed statistically included only the mothers within each of the main groups whose children were mentally competent (i.e., with IQ above 70, and with no evidence of moderate or severe organic brain damage prior to the onset of pica).

The mothers of all the groups had a high degree of difficulty in impulse control in the areas of aggression and sexuality. Mothers of psychiatric comparison children were more disturbed about marital and sexual problems than the other two groups, however, and were more frequently in conflict with another adult over directing the child's behavior. In all but two of the characteristics on which the mothers were rated, both pica and psychiatric comparison group mothers were significantly different from the mothers of the normal group. They were less warm in their relationship to their children,

showed poorer judgment in child care, were more narcissistic, dependent, and avoided dealing with problems. The psychiatric comparison mothers were not as passive as the pica mothers, and were more able to express feelings spontaneously. Their assertiveness led to the active stopping of pica, which fewer of them had themselves or tolerated in the child. Although the pica mothers were usually more constrained in the expression of feelings, a number of them showed uncontrolled emotional outbursts. The major psychiatric diagnoses of the mothers of the mentally competent children are recorded in Table I, along with the diagnoses of Negro mothers on whom information as to adult pica was known. Depression in mothers with pica was frequent ($p = .08$). Both mothers of children with pica and mothers with pica themselves gave responses on the Rorschach suggestive of personality patterns similar to those frequently found in alcoholics and other addicts.

TABLE I
MAJOR PSYCHIATRIC DIAGNOSES OF MOTHERS

	<i>Mothers of Mentally Competent Subgroups</i>			<i>Negro Mothers with and without Pica in Adult Life</i>	
	<i>Normal Comparison Group</i> (N = 27)	<i>Psychiatric Comparison Group</i> (N = 27)	<i>Pica Group</i> (N = 75)	<i>With Pica</i> (N = 39)	<i>Without Pica</i> (N = 55)
Psychotic	0	5	5	2	6
Psychoneurotic (Depressive)	3 (0)	8 (2)	24 (10)	11 (6)	11 (2)
Personality Disorder (Passive-Aggressive)	15 (8)	10 (6)	39 (26)	24 (15)	28 (19)
Psychophysiological Disorders	0	2	2	0	4

The mothers who were psychotic (two required hospitalization during study), alcoholic, depressive, or with personality disorders of passive-aggressive, schizoid, or paranoid types were particularly unavailable to nurture the child's dependency. The mothers of most of

the older children with pica had serious psychopathology. Of the nine children over six years of age studied, two had suffered major separations from their mothers, by death or desertion, four had schizophrenic mothers, the mother of one child was alcoholic, the mother of another child had a paranoid personality, and the employed mother of still another child had neurotic and psychosomatic complaints.

CHILDREN

To summarize the findings on the pica cases and the two comparison groups, a portion of Anna Freud's (1962) "Assessment of Childhood Disturbances" is employed:

A. *Drive Development*

1. Libido

(a) *Phase*: Many of the children were still young enough that persistence of oral activity, in the form of sucking, mouthing, and biting, would not usually be thought of as evidence of regression or defensive phenomena. Rather, these activities still served as a considerable source of gratification due to normal overlapping between phases of development.

While certain children who mouthed, sucked, or bit substances persistently did not take the additional step of swallowing them, others seemed to have libidinized the swallowing mechanism, as has recently been suggested by Milaković (1967), and so regressed to pica.

Review of the histories and findings on personality development of those children from the comparison groups who had never ingested nonedible substances, as contrasted with the thirteen children in the two comparison groups who had done so prior to the arbitrarily chosen dividing line of eighteen months, indicated that persistent ingestion even prior to eighteen months is suggestive of some psychopathology.

Some children in the control group spontaneously relinquished the bottle before one year of age. One explanation of the meaning of this behavior could be that there are differences in the strength of oral drives on a constitutional basis. However, in some children decreased

emphasis on the mouth as the main organ for libidinal satisfaction and tension discharge may result from the use of other sensory organs, such as eyes, ears, or skin, as sources of gratification of dependent wishes in the oral phase.

The children in both the pica and psychiatric comparison groups had a higher incidence of thumb sucking and nail biting and of feeding problems both in infancy and later (after age one) than did normal children. Later feeding problems most frequently took the form of a battle to force eating. A greater percent of pica children were breast fed, and significantly more of them were weaned from the bottle after twenty-four months of age, than were children in either comparison group. Frequently the bottle was used as a pacifier or a pacifier was used far beyond infancy. This prolonged encouragement of sucking with resulting infantilizing may inhibit the more age-appropriate modes of expression and frustrate the child's need to progress to active biting.

In the psychiatric control group there was a high frequency of psychosomatic disorders and of avoidance of oral incorporative activities. In several cases the mother-child interaction was such as to encourage the child to erotize anal functions.

(b) *Distribution:* Certain of the pica children would "go to anyone," at times in preference to the mother, at an age when separation anxiety is ordinarily present. In some instances this was due to the presence of many mother surrogates, but in others there was a deficiency of cathexis of the mother, due to actual separations or to emotional limitations in the mother's ability to participate in what Spitz (1964) has called a "dialogue" with the child. Extreme emotional isolation occurred in the case of a two-year-old who was kept alone in her room behind a closed gate. The room was virtually all she had, and she related to it by biting and ingesting pieces of window sills, crib, and plaster. Other children were physically neglected or even allowed to go hungry.

In spite of the fact that some pica children had not achieved object constancy by the expected age, the pica children as a group were better able than the psychiatric comparison children to form relationships with members of the research team. However, the pica children did not relate as readily or as well as the normal children.

In summary, the children with pica evidenced oral fixation, with a high frequency of various combinations of finger and thumb sucking, nail biting, late weaning, feeding problems, and pica itself. A deficiency in cathexis of the mother and of progression of relationship with her to meaningful communication was a frequent finding with resultant substitution of libidinization of pica substances by the child.

2. Aggression

Both the pica and psychiatric comparison children showed difficulties in integrating their aggressive drives, with a high degree of negativism. About one fourth of the children in all three groups used biting people as a tactic. In attempting to deal with aggression, some of the pica children became excessively passive, and expressed some of the aggression via pica, at times consciously against the parents. The disturbances in the discharge of aggression when there is no "dialogue" between mother and child has been pointed out by Spitz (1964). Aggression in the pica children was aimed at objects, self, and inanimate pica substances.

Some children showed a fusion of aggressive and libidinal drives, with the libidinization of pica substances, and the use of pica as a means of aggression against the parents.

B. *Ego and Superego Development*

(a) *Ego Apparatus:* There were twelve of the pica group and three of the psychiatric comparison group who had severe or moderate organic brain damage which was not due to lead poisoning. It seemed that the perceptual defects of the organically damaged child led some of them to use the mouth as an accessory sense organ. There were increased demands for ego support from adults to compensate for the child's inadequacies. With hyperactivity and poor impulse control frequent, the organically damaged children were those whose pica was the most difficult to control.

(b) *Ego Functions:* In the schizophrenic older children, reality testing was inadequate, and in these children pica was very difficult to arrest. The children with pica had slightly lower intelligence levels than the comparison children. There was suggestive evidence that the pica children were less adequate in their speech than were the comparison children, and in some this was a withholding of speech. A. Katan (1961) has pointed out the importance of verbalization in com-

municating feelings, leading to ego controls, integration, and reality testing. The constraint of the pica mothers in expressing their feelings undoubtedly made it more difficult for them to facilitate such expression in their children. The pica child crying or fussing was not met with help in understanding and expressing his feelings or needs, but unsatisfied, was turned away by the mother to regressive substitution of oral activity, in order that the mother's own narcissistic, passive dependent role might not be disturbed.

(c) *Defense Organization:* In many cases pica was so very persistent that it became a major defensive activity. In other cases it was only one defense employed by the child. Depending upon the defensive structure of individual children, pica served variously as incorporation, introjection, or identification.

Introjection was utilized by many of the children, who having attempted a primitive way of relating to the mother, by physical contact, and finding the mother was not available, substituted oral physical contact with the environment in the form of pica. At this level, pica was an effort to ward off depression due to object loss, and an attempt at restitution.

Winnicott (1953) has described the infants who become attached to certain transitional objects. The normal progression from mouthing fist and fingers to being attached to a soft cloth or toy or other special thing he calls transitional phenomena. In the early stages the infant may even occasionally ingest some part of the transitional object. He states that the meaningfulness of the transitional object to the child, even the development of any such attachment, depends indirectly upon the mothering being "good enough." A preliminary survey of children in Pica Clinic showed that about one fourth of the children never had any true transitional object. The rest had transitional objects or a few had cathected the bottle as one. In some cases, pica and use of transitional objects were concurrent. The distortion of progression to the symbolic transitional object and to the use of language symbols may be related. The child can be exhibiting a primitive craving for substances in the environment, as in pica, and at the same time in a more age-appropriate way be attached to them as transitional objects.

Identification with the mother's pica occurred in many of the children. As such, the fixation point was not as early genetically as in the

case of incorporation and introjection, and the prognosis for the child's future development was better.

PSYCHIATRIC DIAGNOSES OF ALL CHILDREN STUDIED

Of the *pica group* (ninety-five children) seventeen percent had been referred to the Department of Psychiatry because of other problems, and were subsequently discovered to have pica as one symptom. Half of the cases were referred for study after being hospitalized for lead poisoning or ingestion of other toxins. The major diagnoses of the children in the pica group are given in Table II. Only the primary diagnosis of each child is presented for the total group. The breakdown by age groups shows that the older children had the most severe disturbances, as would be expected; in this portion of the table both primary and secondary diagnoses are recorded.

TABLE II
DIAGNOSES OF CHILDREN WITH PICA

	Major Diagnosis Total Group (N = 95)	All Diagnoses		
		6 years and over (N = 9)	5 years (N = 8)	4 years (N = 13)
None	2			
Brain Damage	14			
Severe		2	4	5
Suggestive		3	3	1
Mental Deficiency	1			
Severe		2	3	2
Mild		4	1	1
Psychosis	9	3	2	3
Psychophysiological	0			
Neurosis	8	2		2
Personality Disorder	28		6	6
Schizoid		3		
Other		1		
Transient Personality Disorder	33			

Twelve children in the pica and lead poisoning group had severe or moderate organic brain damage which was not due to lead poisoning. Eleven more children had suggestive evidence of brain damage which was not the result of plumbism.

Among the seventeen white children with pica and lead poisoning who were studied, seven were found to have severe ego disturbances, either because of defects in the ego apparatus due to organic brain damage, or because of weak egos and severe emotional problems, largely schizophrenic. In these ego disturbances the white children were similar to the older Negro children with pica. For the younger Negro children, their mothers' cultural acceptance of pica was of major etiological significance. With fewer outer controls imposed, there was less internalization of a prohibiting superego in regard to pica in the child's immature ego; thus the basic psychopathology was not usually as serious as in the white children or the older Negro children.

Most of the *psychiatric comparison group*, consisting of thirty-two children, had been referred to the Department of Psychiatry. When studied, the group as a whole proved more seriously disturbed than the pica group. Two facts probably contributed to this. These children already had severe enough difficulties before the age of six years to have been referred for psychiatric help, and because the setting of the research was a children's hospital, a number of these difficulties were psychophysiological: eight children had ulcerative colitis, dermatitis, megacolon, constipation, marasmus, or asthma. Three children were neurotic, fourteen had various fixed personality disorders; five had disorders that were more situational, such as a depressive response to her mother's death by one child, and to hospitalization for severe burns by another. In two cases organic brain damage was the primary diagnosis, in one more case a secondary diagnosis. In addition, psychological testing suggested minimal organic brain damage in five others.

In the *normal group* of twenty-seven children, fourteen showed quite normal development. Ten children had some transient situational behavior problems which could probably be considered within normal limits. In three of the children, developmental problems seemed severe enough to indicate some degree of fixed psychopathology. None was mentally retarded, although psychological testing revealed evidence suggestive of minimal organic brain damage in two cases.

Four children of the group originally screened as normal proved upon study to be so disturbed that they were transferred to the psychiatric comparison group.

THERAPY

In Pica Clinic, in addition to the medical management of pica, particularly as it might presage or include follow-up of lead poisoning, an educational approach with the mothers was utilized. The harmful effects of lead-containing substances, and the likelihood of pica children, in particular, to ingest other poisons, such as household cleaners and medicines were discussed. The mothers were encouraged to wean older children still taking the bottle, and also to try to substitute some activity with the mother when the child was noticed to be engaging in pica. The physician's lack of acceptance of pica in his role as an authority acted as a force counter to that of the cultural acceptance to enable many of the mothers to change their handling of the symptom. Where economic or marital problems created maternal deprivation, help by a casework approach, either by the research team members or other community agencies was employed. In many instances the mothers were more able to meet adequately the dependency needs of the children when they had some of their own needs met, and had an opportunity to learn new ways of dealing with some of the crucial family problems. Many of the younger children were still sufficiently malleable in personality to continue with their development when these hindrances were removed. The children with more fixed and severe psychopathology, i.e., the white children and the older Negro children, needed a psychotherapeutic approach as well.

TESTING OF HYPOTHESES

Certain hypotheses as to the etiology of pica had been postulated after the preliminary studies. From the hypotheses and the analysis of the findings, the predictability of the symptom of pica as a resultant of several factors was studied. The term "factor" (not to be confused with factor analysis) was used for want of a better term. A child was considered to have been influenced by a particular factor if he had been subject to any of the conditions listed as subheadings under the given factor. Only the data on the mentally competent subgroups were included in this analysis.

- Factor I Maternal Deprivation
1. Major separation

2. Mother employed with inadequate or shifting mother substitutes
3. Major emotional illness of the mother: psychosis, depression, schizoid personality, paranoid personality, alcoholic.

Factor II Maternal Fostering of Oral Defenses against Anxiety

The mother fosters (consciously or unconsciously) the use of oral activity by the child to handle his anxiety.

1. Late weaning
2. Bottle used as a pacifier
3. Mother had pica
4. Mother seduces child to pica.

Factor III Paternal Deprivation

1. No father ever present in the home
2. Major separation from father
3. Father alcoholic
4. Father rejects child.

Choice of Pica as a Symptom

The analysis of the findings in terms of the hypotheses (Table III) showed the normal comparison group to have the highest proportion (25.9 percent) of children for whom all three postulated contributing factors were absent, and also by far the smallest proportion having maternal deprivation. Of the six normal children with Factors II + III or Factors I + II + III present, three did have pica before the age of one and a half years, and were considered to be pica-prone should a stress situation occur calling for defensive action. Almost half of the normal group did have Factor II present. This suggests that the maternal fostering of oral activity as a defense does not itself produce pica; there is a greater probability of pica if parental, especially maternal, deprivation occurs concomitantly.

In the psychiatric comparison group 21.4 percent of the children had all three factors operating with no resultant pica. Some of the possible reasons have been discussed in the section on the children.

Only two children with pica had none of the three factors present. About two thirds of the group were in the combinations of Factors II + III (31.2 percent) and Factors I + II + III (31.2 percent). It was significant that with the father unavailable for identification

TABLE III
PARENTAL DEPRIVATION AND ORAL DEFENSES VS. ANXIETY AS CONTRIBUTING FACTORS TO PICA

<i>Factor</i>	<i>Normal Comparison Group</i> (N = 27)		<i>Psychiatric Comparison Group</i> (N = 28)		<i>Normal-Pica P</i>	<i>Normal-Psychiatric P</i>	<i>Psychiatric-Pica P</i>
	<i>Group</i>	<i>Percent</i>	<i>Group</i>	<i>Percent</i>			
I Maternal deprivation	11.1	47.5	53.6	<.01	<.01	N.S.	
II Maternal fostering of oral defenses vs. anxiety	48.1	83.8	50.0	<.01	N.S.	<.01	
III Paternal deprivation	48.1	73.8	64.3	<.05	N.S.	N.S.	
None of factors	25.9	2.5	7.1	<.01	N.S.	N.S.	
None or only one factor	70.3	23.7	46.4	<.01	<.10	<.05	
I only	0	2.5	14.3	N.S.	N.S.	>.05	<.10
II only	25.9	12.5	7.1	N.S.	N.S.	N.S.	
III only	18.5	6.2	17.9	N.S.	N.S.	N.S.	
I + II	0	8.8	7.1	N.S.	N.S.	N.S.	
I + III	7.4	5.0	10.7	N.S.	N.S.	N.S.	
II + III	18.5	31.2	14.3	N.S.	N.S.	N.S.	
I + II + III	3.7	31.2	21.4	<.01	.10	N.S.	

A confidence level of 0.05 or less is considered "significant." Values greater than 0.05 are labeled N.S.—not significant.

purposes, one of the resultant identifications ensuing was with the mother's oral defenses, including pica. Burton and Whiting (1961) have studied other aspects of the absence of the father on identification.

The pica and psychiatric groups were not distinguishable from each other as to maternal or paternal deprivation, though both had significantly more than the normal group, especially of maternal deprivation. In the presence of these deprivations, the most important factor in the choice of pica as a symptom seemed to be that the mother handled the child's anxiety in the same way she handled her own, by oral satisfaction. Still, it cannot be predicted with a high degree of confidence that pica will necessarily occur under these conditions, though it is one likely defense available to the child.

The mothers had significantly more pica themselves, both in the comparisons between total groups and mentally competent subgroups, than did either of the comparison groups. The children were weaned late from the bottle; the pacifier was used to a late age, frequently in the form of an empty bottle dangling from the child's mouth. When the child cried or fussed, the mother was unable to explore his feelings and respond to them, but rather shunted the child to oral satisfaction. The mothers described this: "Whenever he fusses, I give him about an ounce of milk in a bottle." In Pica Clinic when a twenty-one-month-old girl was panicky about the physical examination, the mother put a pacifier in her mouth to calm her. Hilda Bruch (1961) reported similar findings from the history of an obese child who had been appeased by having his mouth stuffed with cookies to keep him quiet at the age of eight to ten months; otherwise little attention had been paid to him. In many of the cases we observed, an empty bottle was offered the child, or sometimes starch or dirt.

Beres considers that the manifestation of drives may vary, but the basic drives themselves do not change (see Marcovitz, 1963). In the pica group that we studied, the mothers fostered excessive oral satisfaction and enhanced the role of the drive as a defense against a number of anxieties. Among the anxieties which were observed to be dealt with by the oral defense of pica were those related to loss of the mother's love, separation from the father or other important parent figures, bodily hurt, and aggression. Fenichel's (1945) discussion seems most closely to parallel our observations of the psychodynamics

of pica when he states that fixations occur most frequently when instinctual satisfaction simultaneously gives reassurance in the presence of anxiety. Excessive frustration of the oral drive as a cause of fixation was rarely seen in the group studied, though it was found in some cases, particularly a few of the white children.

In many of the cases, pica is an *addiction* in the psychodynamic sense, though it is not pharmacological. In both drug addiction and pica, a distorted instinctual satisfaction is impulsively engaged in as a defense against the loss of security. Knight (1937), in presenting his psychoanalytic formulations regarding alcoholic addiction stated, "by fostering the pattern of soothing the infant through oral pacifying she [the mother] builds in a pattern of tremendous strength." Our findings on the pica children revealed some of the same characteristics as the McCords (1960) have reported in a longitudinal study of children who later became alcoholics. The pica children had dependency conflicts, conflicts around passivity and aggression, negativism, and used oral defenses against anxiety. Similarly, the mothers who had pica themselves were passive, narcissistic, unaware and unaccepting of their own affectional and dependent needs, had poor control of sexual and aggressive impulses, and showed significantly more depressive and neurotic signs than mothers without pica. Pica is found in children with various psychiatric diagnoses (as are alcoholism and drug addiction), but certain characteristics are significantly present throughout.

SUMMARY

Pica is the persistent ingestion of inedible substances. Almost all cases of lead poisoning in children result from pica, and pica was found in 55 percent of children hospitalized for "accidental poisonings." Its psychological consequences stem from the fact that it is evidence of an oral fixation or regression. The findings reported here are based upon the study of ninety-five children with pica and sixty-nine children studied as normal or psychiatric comparison cases.

The seriousness of the psychopathology depends upon the relative importance of the various factors operating in the etiology of a given case. Constitutional differences both in the strength of the child's oral drives and in the child's endowment of ego apparatus (particularly

brain damage) account for a small proportion of differences in oral activities.

As part of normal development, the infant begins exploring the environment by mouthing, and substances are occasionally ingested, beginning about the middle of the first year. The attachment to inanimate objects begins during this period and is the beginning of transitional phenomena. Maternal deprivation may lead to a deficiency in cathexis of the mother and a distortion of the normal progression to attachment to the symbolic transitional object, with a fixation on the early libidinization of pica substances. Pica may serve as a defense against object loss, and as such it is related to depressions. Severe persistent pica even before eighteen months of age is suggestive of psychopathology.

During his second year, the child identifies with the attitude of the mother toward oral activities, including pica. Sixty-three percent of the mothers of Negro children with pica have pica themselves. If the mother culturally accepts pica, or consciously or unconsciously otherwise fosters the use of oral defenses against anxiety (by late or vassillating weaning, or late use of a pacifier), the child's pica is likely to continue.

However, maternal fostering of oral activity as a defense against anxiety does not itself produce pica unless maternal and/or paternal deprivation occurs concomitantly. The use of oral defenses was also fostered to a lesser extent by the mothers of the normal children, but the normal children suffered the least maternal deprivation. Even within the subculture where separations from parents and many mother surrogates are commonplace, separations occurred much more frequently in the pica group and the psychiatric comparison group than in the normal group. Separation from one or both parents preceded the onset of pica in a number of the children. The emotional limitation of many a pica mother made it impossible for her to respond to the child's needs and to help him to verbalize his feelings. The child was rather shunted to oral satisfaction. The personalities of the mothers revealed passivity, narcissism, poor control of impulses, manifest anxiety, and neurotic and depressive patterns. A few were psychotic. There were more oral habits (alcoholism, drug addiction, and pica) among the parents of children with pica.

The fixation of pica was observed most frequently where there was excessive satisfaction of the oral drive; excessive frustration was found infrequently. In many of the cases, pica was an addiction in the psychodynamic sense, in that a distorted instinctual satisfaction was impulsively engaged in as a defense against the loss of security.

White children and Negro children over three years old who still have pica show more serious psychopathology. In children over six years of age, poor reality testing due to brain damage or psychosis in either the mother or child or both plays a major role. In these children, pica is a most difficult symptom to deal with, as is the basic pathology.

Among the other psychiatric diagnoses of children with pica were found neuroses and personality disorders, both situational and fixed types. Although pica is found in children with varying psychiatric diagnoses, certain behavioral characteristics were significantly present throughout the cases, when they were compared with normal children. Children with pica had a high degree of other oral problems, including mouthing of objects, thumb sucking, and psychological feeding problems. They were somewhat retarded in speech development, and some withheld speech. They showed conflicts about their dependency needs and around handling of their aggressive feelings, and exhibited considerable negativism.

Where identification with the mother's pica was a major factor in the child's choice of pica as a symptom, the fixation point was not so early genetically, and the mothers and children frequently responded to guidance in the Pica Clinic. In those cases where economic or marital problems led to maternal deprivation, as a major causative factor in the child's pica, a casework approach was utilized. Many of the younger children were still sufficiently malleable in personality to benefit from this approach. If the child's psychopathology had developed to such an extent that these approaches were deemed insufficient, then psychotherapy was indicated.

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